

Remarks

Applicants respectfully request reconsideration of the above-identified application. Claims 1-73 and 75-112 remain in this application. New claims 107-112 have been added. Claim 74 has been canceled as duplicative of claim 69. Applicants respectfully traverse the rejections as applied to the pending claims.

I. Rejection based on the art.

Claims 1-26, 36, 39, 56-61, 77, 87, 93-94, and 96 were rejected under 35 U.S.C. §103(a) as obvious in view of U.S. Patent 6,060,136 to Patrick¹ combined with U.S. Patent 3,976,614 to Elms.

Claims 27-35, 37-38, 40-55, 62-76, 78-86, 88-92, 95, 97-106 were rejected under 35 U.S.C. 103(a) as obvious in view of Patrick combined with Elms and U.S. Patent 4,008,115 to Fairbanks.

There are four elements of interest with respect to the pending claims: 1) thermoset inks, 2) thermoset varnishes, 3) radiation-cured inks, and 4) radiation-cured varnishes.

Patrick fails to disclose thermoset inks. (Office action mailed Dec. 6, 2006 at p.2, §4.) To supplement the shortcoming with respect to thermoset inks, the recent Office action cited Elms. (Office action mailed Dec. 6, 2006 at p.3, §4.)

Patrick fails to disclose thermoset varnishes.

Patrick fails to disclose radiation-cured inks. (Examiner Nolan, Office action mailed Dec. 3, 2003 at section 7.)²

¹ Patrick '136 corresponds to International Patent Application Publication WO 97/28964, which published on August 14, 1997.

² Although the most recent Office action states that Patrick discloses that the "entire film is treated with radiation thus causing crosslinking" (Office action mailed Dec. 6, 2006 at p.2, §4), Patrick nevertheless has nothing to do with radiation *curing* of an ink or a varnish. Please see the previous Response mailed September 18, 2006 at page 2 for a more detailed discussion of why this is the case. (For the sake of brevity, that discussion is not repeated here.) Simply put, Patrick teaches irradiation of a film to "induce cross-linking between molecules" of the film. (Patrick, col. 13, lines 35-37.) This type of irradiation procedure has nothing to do with radiation-*cured* inks and varnishes.

Patrick fails to disclose radiation-cured varnishes. (Office action mailed Dec. 6, 2006 at p.2, §4 and p.3, §5.) To supplement the shortcoming with respect to radiation-cured varnishes, the recent Office action cited Fairbanks. (*Id.* at p.3, §5.)

A *prima facie* case of obviousness requires that the applied prior art references teach or suggest *all* of the claim limitations. MPEP §706.02(j). Each claim recitation must be considered in judging the patentability of that claim against the prior art. MPEP §2143.03.

Applicants respectfully traverse the rejection of each of the following claims because a *prima facie* case of obviousness has not been established. Even if Patrick were combined with Elms or Elms and Fairbanks, the resulting combination does not render the claimed invention obvious because the proposed combination fails to teach or suggest all of the claim recitations.

A. Claims rejected on Patrick combined with Elms

Regarding dependent claim 7, neither Patrick nor Elms teaches or suggests the recited total free shrink.

Regarding dependent claim 8, neither Patrick nor Elms teaches or suggests a radiation-cured ink.

Regarding dependent claim 9, neither Patrick nor Elms teaches or suggests an electron-beam cured ink.

Regarding dependent claim 10, neither Patrick nor Elms teaches or suggests an ultraviolet-light cured ink.

Regarding dependent claims 20-24 and 57-61, neither Patrick nor Elms teaches or suggests applying a radiation-curable ink.

B. Claims rejected on Patrick combined with Elms and Fairbanks.

Regarding dependent claims 32, 73, 85, and 104, none of Patrick, Elms, or Fairbanks teaches or suggests the recited total free shrink.

Regarding dependent claim 40, none of Patrick, Elms, or Fairbanks teaches or suggests a thermoset urethane-based overprint varnish. Elms was cited for thermoset inks, but fails to provide any teaching or suggestion of thermoset overprint varnishes. Patrick was cited to show an antifog film. Fairbanks was cited to show radiation-curable overprint varnish, but fails to teach or suggest thermoset overprint varnish.

Regarding claims 48-49, 65-66, and 98-99, none of Patrick, Elms, or Fairbanks teaches or suggests “electron-beam radiation having an energy of less than about 100 keV” or “less than about 50 keV.”

Regarding dependent claims 50, 67, and 100, none of Patrick, Elms, or Fairbanks teaches or suggests a “radiation-curable varnish [that] includes less than 20 % monofunctional monomer.”

Regarding dependent claims 51, 68, and 101, none of Patrick, Elms, or Fairbanks teaches or suggests a “radiation-curable varnish [that] includes less than 20 % reactant diluent.”

C. Objective evidence establishing non-obviousness.

I. Comparative test data.

Applicants also respectfully traverse the obviousness rejections by directing the Examiner’s attention to the comparative data in the Application (page 33, line 27 to page 36, line 15) as objective evidence establishing non-obviousness.

As described in the Example section of the Application, eight samples of printed anti-fog films (Sample Nos. 1-8) were formed by applying a solvent-based ink formulation to one side of equivalent plastic films that incorporated 3% antifog agent in the outer layers. (Page 35, lines 7-16.) The “comparison” films of Samples Nos. 1-2 did not include either a radiation-cured varnish or a two-part reactive thermoset varnish on the print of the anti-fog film. Samples Nos. 3-6 were made according to the present invention because a cured overprint varnish (i.e., electron-beam curable overprint varnish) was on the print of the antifog film. (Page 35, lines 17-21.) Samples Nos. 7-8 were made according to the present invention because a cured overprint varnish (i.e., a two-part reactive thermoset varnish) was on the print of the antifog film. (Page 35, line 21 to page 36, line 2.)

Each of Samples 1-8 were subjected to conditions simulating storage of the printed films in roll form, which is the believed cause of “ghosting” (explained in the Application, page 2, lines 4-19). The comparative Samples 1-2 demonstrated deteriorated antifog characteristics, as shown by the Antifog Ratings of 1; whereas, the Samples 3-8 according to the present invention did not demonstrate any significant deterioration of antifog characteristics, as shown by the Antifog Ratings of 4.5 to 5 (“excellent”).

There was no reason to have expected that the use of a radiation-cured overprint varnish with a printed anti-fog film would cause the Samples 3-6 films to have superior anti-fog performance after exposure to ghosting-inducing conditions, as shown by the comparative data.

There was no reason to have expected that the use of a thermoset varnish with a printed anti-fog film would cause the Samples 7-8 films to have superior anti-fog performance after exposure to ghosting-inducing conditions, as shown by the comparative data.

2. There is no requirement that a claim recite the unexpected result.

The previous Office action states that the unexpected results showing discussed above was “not commensurate in scope with the independent claims because none of the independent claims recite improved anti-fog properties in terms of a quantity.” (Office action mailed Dec. 6, 2006 at p.4, section 6.)

Applicants respectfully traverse. There is no requirement that a claim recite the property for which unexpected results occur – much less a requirement that the unexpected results property be recited in terms of a quantity. To the contrary, claims are often allowed based on unexpected results where the claim does not recite unexpected properties at all.

For example, in *In re Soni*, 34 USPQ2d 1684, 1688 (Fed. Cir. 1995), *Soni* claimed a composition comprising a mixture of: i) an organic polymer having a molecular weight greater than 150,000 and ii) a particulate conductive filler. *Id.* at 1685. A *prima facie* case of obviousness was established by a combination of a primary reference (Lunk or Taylor) with a secondary reference (Wu, Capaccio, or Ward). To rebut the *prima facie* case of obviousness, *Soni* pointed to the unexpected results evidence in the specification showing substantially increased tensile strength for the claimed composition made with 203,000 molecular weight

polymer compared to a composition made with 148,000 molecular weight polymer. *Id.* at 1685. The Federal Circuit agreed that this showing was sufficient to rebut the *prima facie* case of obviousness. *Id.* at 1688.

The Federal Circuit made no requirement that the *Soni* claim recite improved tensile strength properties at all, much less in terms of a quantity. Just as the Federal Circuit did not require that the *Soni* claims recite the improved tensile strength properties, so too should the Office not require that the present claims recite the superior antifog performance after exposure to conditions that otherwise induce ghosting.

Other examples abound where the courts did not require the claims to recite the improved property that formed the basis for the unexpected results. See, for example, *In re Chupp*, 2 USPQ2d 1437, 1439-40 (Fed. Cir. 1987) (no requirement that the claim directed to a herbicide also recite improved herbicidal activity; *see also*, U.S. Patent 4,731,109 to Chupp); *In re Waymouth*, 182 USPQ 290, 291-93 (CCPA 1974) (no requirement that claims to an arc tube lamp recite the improved intensity of white light emission on which unexpected results based); *In re Orfeo*, 169 USPQ 487, 488-89 (C.C.P.A. 1971) (no requirement that the claims recite the unexpected result of lower power requirements for a refrigeration process using a refrigerant mixture of CHF₃/CClF₃); and *In re Papesch*, 137 USPQ 43, 44-45, 51 (no requirement that the claim to a compound also recite the improved anti-inflammatory activity).


II. Conclusion

In view of these remarks, it is respectfully submitted that the present application is in condition for allowance. A notice to that effect is earnestly and respectfully requested.

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